

## ABSTRACT

Mosquitoes are the deadliest animal in the world through the spread of malaria according to the World Health Organization. On the other hand, used cooking oil is a household waste that has the potential to be reused into valuable products, as well as coffee grounds which are solid waste that is believed to have compounds that have the potential to outwit mosquitoes' sense of smell. This study aims to develop and assess the effectiveness of environmentally friendly products in the form of aromatherapy candles formulated from a mixture of used cooking oil as a base material and coffee grounds. The combination of these two materials is expected to produce aromatherapy candles that are not only effective in repelling mosquitoes, but also in reducing waste and negative impacts on the environment.

The research method used was a field effectiveness test by comparing the number of mosquitoes in a room with aromatherapy candles and a room without aromatherapy candles at the same time and location. In addition, a questionnaire survey was conducted to 20 respondents using a Likert scale to assess 4 aspects, namely, effectiveness, safety, comfort, and public perception of aromatherapy candles. The data obtained from field tests and questionnaires were analyzed quantitatively descriptively.

The results of the field test showed that there was a difference in the number of mosquitoes trapped in the room with aromatherapy candles and the room without aromatherapy candles, with an average number of mosquitoes as much as 6.14 in the room without aromatherapy candles and as much as 0.14 in the room with aromatherapy candles. Based on these results, it can be stated that aromatherapy candles are effective in reducing the number of mosquitoes in the room. Meanwhile, the survey results showed that 88% of respondents had a positive perception of aromatherapy candles, 84.25% considered aromatherapy candles effective in repelling mosquitoes, 91.75% stated that they were safe to use, 90% stated that they were comfortable and supported the utilization of waste into environmentally friendly products.

This research contributes to the development of environmentally friendly and sustainable products for mosquito control. The utilization of used cooking oil and coffee grounds as basic ingredients for aromatherapy candles is an innovative solution to reduce waste and create products with economic value. The results of this study can be the basis for further development of aromatherapy candles with formulas that are more effective and safe for the environment and human health.

**Keywords:** Aromatherapy candles, used cooking oil, coffee grounds, mosquito repellent, environmentally friendly.